

"Raising to Object" and the Successive Cyclicity of Long Scrambling in Japanese

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1. Introduction

Japanese has the "Raising-to-Object" (RTO) construction, in which the subject of the complement clause of an epistemic verb is accusative-marked ((1b)). It allows long-scrambling (i.e. scrambling out of an embedded clause) too ((2b)).

- (1) a. John-wa [David-ga [Nihon-no rekishi]-ni
John-TOP(IC) David-NOM(INACTIVE) Japan-GEN(ITIVE) history-DAT(IVE)
kuwashi-i]-to omot-ta
familiar-PRES-COMP think-PAST
'John thought that David was familiar with the history of Japan.'
- b. John-wa David-o [Nihon-no rekishi]-ni
John-TOP David-ACC(USATIVE) Japan-GEN history-DAT
kuwashi-i-to omot-ta
familiar-PRES-COMP think-PAST
'John thought David to be familiar with the history of Japan.'
- (2) a. John-wa [David-ga [kono hon]-o yon-da]-to omot-ta
John-TOP David-NOM this book-ACC read-PAST-COMP think-PAST
'John thought that David had read this book.'
- b. [Kono hon]-o, John-wa [David-ga _ yon-da]-to omot-ta
this book-ACC John-TOP David-NOM read-PAST-COMP think-PAST
'This book, John thought that David had read.'

However, long-scrambling out of an RTO-complement is degraded. Long Scrambling can be applied to the Dative complement of the embedded adjective in (1a), in which the subject of the embedded clause is nominative-marked, to derive (3a). In contrast, (3b), in which the Dative complement of the embedded adjective in an RTO-complement has undergone long-scrambling, is less acceptable than (1a, b) and (3a): So-called "Raising to Object" interferes with Long Scrambling.

- (3) a. [Nihon-no rekishi]-ni, John-wa [David-ga _ kuwashi-i]-to
Japan-GEN history-DAT John-TOP David-NOM familiar-PRES-COMP
omot-ta
think-PAST (A: 3; B: 2; C: 2; D: 4)
'The history of Japan, John thought that David was familiar with.'
- b. ?* [Nihon-no rekishi]-ni John-wa David-o _ kuwashi-i]-to
Japan-GEN history-DAT John-TOP David-ACC familiar-PRES-COMP

omot-ta
 think-PAST (A: 2; B: 1; C: 1; D: 1)
 ‘The history of Japan, John thought that David was familiar with.’

The acceptability of (3b) can be improved if the accusative subject is shifted into the matrix domain. (4a), in which the accusative subject follows the matrix adverbial, is as degraded as (3b). In contrast, in (4b), the accusative subject is shifted across the matrix adverbial and this shifting results in improvement of the acceptability.

- (4) a. ?* [Nihon-no rekishi]-ni John-wa [kokoro-no soko]-kara David-o
 Japan-GEN history-DAT John-TOP heart-GEN bottom-from David-ACC
 — kuwashi-i-to omot-ta
 — familiar-PRES-COMP think-PAST (A: 2; B: 1; C: 1; D: 2)
 ‘The history of Japan, John thought from the bottom of my hearts that David was familiar with.’
- b. ?(?) [Nihon-no rekishi]-ni, John-wa David-o [kokoro-no
 Japan-GEN history-DAT John-TOP David-ACC heart-GEN
 soko]-kara — kuwashi-i-to omot-ta
 bottom-from — familiar-PRES-COMP think-PAST (A: 3; B: 2; C: 3; D: 3)

I consulted four informants (Speakers A-D) about the acceptability of (3a, b) and (4a, b). Their judgments have been shown after each example (4: Perfectly acceptable; 3: Not perfect, but acceptable; 2: Bad, but not completely unacceptable; 1: Completely unacceptable). All four of them judged (3b) and (4a) to be less acceptable than (3a). All of them judged (4b) to be more acceptable than (3b) and (4a).¹

This paper offers a principled explanation for the unacceptability of (3b)/(4a) and the contrast between (3b)/(4a) and (4b). The analysis presented here rests on the assumption that when two or more elements are located at a phasal edge, only the highest/outermost edge counts as the edge for the purpose of the Phase-Impenetrability Condition (Bošković 2016) and on the ‘Tucking-in’ analysis of multiple specifiers (Richards 1998). I assume that the accusative embedded subject in the Japanese ‘RTO’-construction is moved to [Spec, C] of the embedded clause. I will argue that, at a stage of the derivation of (3b)/(4a), the accusative embedded subject occupies the outer [Spec, C] of the embedded clause and the element to be long-scrambled occupies the inner [Spec, C]. Because only the

¹ One might think that the degradedness of (3b) and (4a) is induced by the nullness of the embedded adjective’s complement. In this connection, consider (i).

- (i) John-wa David-o [Nihon-no rekishi]-ni kuwashi-i-to omot-ta-ga,
 John-TOP David-ACC Japan-GEN history-DAT familiar-PRES-COMP think-PAST-but
 Bill-wa Bob-o *pro/e* kuwashi-i-to omot-ta
 Bill-TOP Bob-ACC familiar-PAST-PRES-COMP think-PAST
 ‘John thought David to be familiar with the history of Japan but Bob thought Bob to be familiar with it.’

In the second conjunct in (i), the complement of the embedded adjective is replaced by *pro* or undergoes argument ellipsis. The fact that (i) is acceptable suggests that the degradedness of (3b) and (4a) should be attributed not to the nullness of the embedded adjective’s complement, but to the application of long-scrambling and some inadequacy it induces.

highest/outermost edge counts as the edge for the purpose of the Phase-Impenetrability Condition and thus can be extracted, the embedded accusative subject in the outer [Spec, C] blocks further movement of the element in the inner [Spec, C] (i.e. long-scrambling). This is the core of my explanation of the degradedness of (3b)/(4a).

The organization of the rest of this paper is as follows. Section 2 introduces the two theoretical assumptions that are relevant to the analysis to be presented in Section 4. Section 3 considers the 'RTO'-construction in Japanese, focusing on the position(s) of the accusative embedded subject. It will be assumed that the accusative embedded subject is moved to the embedded [Spec, C] for the case-reason and it can optionally be moved into the matrix domain by non-string-vacuous VP-internal scrambling. Section 4 will focus on the derivations of (3b)/(4a) and (4b), showing how the embedded accusative subject interferes with long-scrambling in (3b)/(4a) and how this interference is eliminated by shifting the accusative subject into the matrix domain in (4b). Section 5 concludes this paper.

2. The Two Theoretical Assumptions

First, I adopt the condition (5) on extraction from phases.

- (5) When more than one element is located at a phasal edge, only the highest/outermost edge is the edge for the purpose of the Phase-Impenetrability Condition (PIC).
(Bošković 2016: 9).

Now consider (6). HP in (6) is intended to be a phase, and X and Y are the outer and the inner specifiers of H.

- (6) a. $[_{HP(\text{phase})} \bar{X} [_{H'} Y [_{H'} \dots H \dots]]]$
 b. $X \dots [_{HP(\text{phase})} t_X [_{H'} Y [_{H'} \dots H \dots]]]$
 c. $*Y \dots [_{HP(\text{phase})} \bar{X} [_{H'} t_Y [_{H'} \dots H \dots]]]$

(5) allows extraction of X, the outermost specifier of H ((6b)), but it prohibits extraction of Y, the inner specifier, over X ((6c)). I refer the reader to Bošković (2016) for the empirical evidence for (5). I assume that a trace does not count as an edge (Bošković 2016: 19): if the element at the highest edge is extracted ((7a)), the element in the second highest edge counts as the edge and can be extracted ((7b)). Interested readers may refer to Bošković (2016) for the evidence for this assumption.

- (7) a. $X \dots [_{HP(\text{phase})} t_X [_{H'} \bar{Y} [_{H'} \dots H \dots]]]$
 b. $(Y) \dots X \dots (Y) \dots [_{HP(\text{phase})} t_X [_{H'} t_Y [_{H'} \dots H \dots]]]$

Second, I assume that multiple specifiers of a single head X are formed by movement in the manner depicted in (8) (Richards 1998).

- (8) a. $[_{XP} X [\dots YP \dots ZP \dots]]$
 b. $[_{XP} YP [X' X [\dots t_{YP} \dots ZP \dots]]]$
 c. $[(*ZP) [_{XP} YP [(ZP) [X' X [\dots t_{YP} \dots t_{ZP} \dots]]]]]$

In (8a), where both YP and ZP can be attracted by X and YP is closer to X than ZP, YP is moved first due to Attract Closest ((8b)). When ZP is moved, it is moved to the inner [Spec, X] ((8c)), because the inner [Spec, X] is closer to the original position of ZP than the outer [Spec, X].

3. The Positions of the Accusative Subject

I assume that, in the RTO construction in Japanese, the ‘raised’ accusative subject is moved to the embedded [Spec, C] ((9), Akaso 2015; Hiraiwa 2005; Kaneko 1988; Kishimoto 2019).

(9) ... [_{VP} [_{v'} [_{VP} [_{CP} Subj-Acc [_{C'} ... [_{TP/FinP} ... T/Fin] C]] V] v]] ...

Accusative case on the embedded subject is assigned by the matrix *v* (if case is assigned by a functional category) or through the interaction with the matrix subject (if the Dependent Case theory is adopted). Whichever theory of case is adopted, the accusative subject must be located in a position that is accessible from the matrix *v* or the matrix subject. On the assumption that CP is a phase, this point can be captured, if the embedded subject is moved to the embedded [Spec, C], where it is accessible from the upper clause.

(10) offers a piece of evidence that the accusative subject can remain in the embedded CP. In (10), the accusative subject is fronted together with the embedded CP, which can be explained if it is contained in the CP.

(10) [Mary-o kirei-da]-to John-wa omot-ta
 Mary-ACC beautiful-COPULA-COMP John-TOP think-PAST
 ‘John thought that Mary was beautiful.’

The examples in (11) offer the evidence that the accusative subject is in a higher position than the nominative subject.

(11) a. Yamada-sensei-wa [amari ooku-no seito]-ga daigaku-ni
 Yamada-teacher-TOP so many-GEN student-NOM university-DAT
 gookaku-deki-na-i-to omot-ta
 pass-can-NEG-PRES-COMP think-PAST
 ‘Mr. Yamada thought it was not the case that many students could pass the entrance examination of a university.’
 b. * Yamada-sensei-wa [amari ooku-no seito]-o daigaku-ni
 Yamada-teacher-TOP so many-GEN student-ACC university-DAT
 gookaku-deki-na-i-to omot-ta
 pass-can-NEG-PRES-COMP think-PAST

In (11a, b), *amari ooku*, which is a negative polarity item to be licensed by the embedded negation (Kishimoto 2017), appears in the embedded subject. The acceptability of nominative case is explained by assuming that the scope of sentential negation is TP/FinP (Kishimoto 2017), which contains the surface position of the nominative subject ([Spec, T]/[Spec, Fin]). The unacceptability of accusative case shows that the accusative subject

does not fall under the scope of negation: it is not contained in TP/FinP. The accusative subject can be contained in the embedded CP ((10)) but is not contained in TP/FinP ((11)), which can be explained by assuming that it is moved to [Spec, C] ((9)).

The ‘raised’ subject can precede a matrix adverbial ((12)).

- (12) John-wa (Bill-o) [kokoro-no soko]-kara (Bill-o) kashiko-i-to
 John-TOP Bill-ACC heart-GEN bottom-from Bill-ACC clever-PRES-COMP
 omot-ta
 think-PAST
 ‘John thought Bill to be clever from the bottom of his heart.’

I assume that the accusative subject in [Spec, C] is optionally moved into the matrix domain (Akaso 2015; Hiraiwa 2005). I suppose that this is an instance of VP-internal scrambling in the sense of Takano (1998) and its landing site is (or at least can be) [Spec, V] ((13)).

- (13) ... [_{VP} [_V [_{VP} Subj-Acc [_V ... [_{CP} t_{Subj-Acc} [_C ... [_{TP/FinP} ... T/Fin] C]] V]] v]] ...

I propose that this movement cannot be string-vacuous: it is applied only when it affects the linear order.

4. An Analysis of (3b)/(4a) and (4b)

This section explains the unacceptability of (3b)/(4a) and the contrast between (3b)/(4a) and (4b), taking their derivations into consideration.

The derivation of (3b)/(4a) is shown in (14a-g). First of all, the embedded adjectival phrase is formed: A is merged with its Dative PP-complement; AP is merged with the light adjective *a*, the adjectival counterpart of the light verb *v*; the embedded subject is merged as the specifier of *a* ((14a)). I assume that *a*P is a phase category just like *v*P is, although nothing hinges on this assumption (see note 2).

- (14) a. [_{aP} David_{SUBJ} [_{a'} [_{AP} [_{PP} Nihon-no rekishi-ni] kuwashi] *a*]]

In order to escape the domain of *a*, the PP-complement of A is moved to the inner [Spec, *a*] ((14b), see (8c)).

- (14) b. [_{aP} David_{SUBJ} [_{a'} [_{PP} Nihon-no rekishi-ni] [_{a'} [_{AP} t_{PP} kuwashi] *a*]]]

The *a*P in (14b) is merged with T and TP is merged with the embedded C ((14c)). I assume that the embedded T in the RTO-construction does not have the EPP-feature, although nothing hinges on this assumption (see note 2).

- (14) c. [_{CP} [_{TP} [_{aP} David_{SUBJ} [_{a'} [_{PP} Nihon-no rekishi-ni] [_{a'} [_{AP} t_{PP} kuwashi] *a*]]] *i*] to]

The subject and the PP must move to edges of CP (the former for the case-reason; the latter for the PIC-based locality reason). Since the subject asymmetrically c-commands the PP,

the former is closer to C(P) than the latter.² The subject is moved first ((14d)) and the PP is moved to the inner specifier ((14e)) (see (8b, c)). After the subject is extracted from the outer [Spec, *a*], the PP in the inner [Spec, *a*] can count as the edge of *a*P (see (7)).

- (14) d. [_{CP} David_{SUBJ} [_{C'} [_{TP} [_{aP} t_{SUBJ} [_{a'} [_{PP} Nihon-no rekishi-ni] [_{a'} [_{AP} t_{PP} kuwashi] *a*]]] i] to]]
 (14) e. [_{CP} David_{SUBJ} [_{C'} [_{PP} Nihon-no rekishi-ni] [_{C'} [_{TP} [_{aP} t_{SUBJ} [_{a'} t_{PP} [_{a'} [_{AP} t_{PP} kuwashi] *a*]]] i] to]]

CP in (14e) is merged with the matrix V and VP is merged with *v*. The matrix subject is merged as the specifier of *v* ((14f)).

- (14) f. [_{vP} John_{SUBJ} [_{v'} [_{VP} [_{CP} David_{SUBJ} [_{C'} [_{PP} Nihon-no rekishi-ni] [_{C'} ... to]]] omow] *v*]]

In order to later move to the initial position of the matrix clause, the PP in the inner [Spec, C] must move to (one of) the edge(s) of the matrix *v*P due to the PIC. Importantly, it cannot be, because it is not the outermost edge of the CP ((14g), see (5)). For this reason, the PP cannot move out of the embedded CP: it cannot be long-scrambled.

- (14) g. *_{vP} John_{SUBJ} [_{v'} [_{PP} Nihon-no rekishi-ni] [_{v'} [_{VP} [_{CP} David_{SUBJ}] [_{C'} t_{PP} [_{C'} ... to]]] omow] *v*]]]

The same analysis can be applied to (4a), in which a matrix adverbial occurs but the accusative embedded subject is not shifted into the matrix clause. Long-scrambling in (3a) is possible, because the embedded subject is nominative-marked and is not moved to [Spec, C]: the nominative subject does not interfere with long-scrambling.

Because the unacceptability of (3b) is attributed to the embedded subject occupying the outer [Spec, C], it is predicted that, if the embedded subject in (14g) is extracted, the PP in the inner [Spec, C] can be extracted (see (7)). This is what (4b) shows. The derivation of (4b) is shown in (15a-d).

Like in (14), the embedded subject is moved first and the PP is moved to the inner [Spec, C] ((15a)).

- (15) a. [_{CP} David_{SUBJ} [_{C'} [_{PP} Nihon-no rekishi-ni] [_{C'} [_{TP} [_{aP} t_{SUBJ} [_{a'} t_{PP} [_{a'} [_{AP} t_{PP} kuwashi] *a*]]] i] to]]

Then the embedded subject is moved to [Spec, V] by VP-internal scrambling ((15b), see (13)).

- (15) b. [_{vP} John_{Matrix} SUBJ [_{v'} [_{VP} David_{SUBJ} [_{v'} [_{CP} t_{SUBJ}] [_{C'} [_{PP} Nihon-no rekishi-ni] [_{C'} [_{TP} [_{aP} t_{SUBJ} [_{a'} t_{PP} [_{a'} [_{AP} t_{PP} kuwashi] *a*]]] i] to]]] omow]]] *v*]]

² If *a*P is not a phase category, the PP-complement of A will not need to move to the (inner) [Spec, *a*]. Then the subject in [Spec, *a*] will be closer to C(P) than the PP after all. If the embedded T has the EPP-feature, the embedded subject will be attracted to [Spec, T]. Then the subject will be closer to C(P) than the PP-complement of A, after all.

Because the embedded subject has been extracted, the PP in the inner [Spec, C] can now count as the edge of the embedded CP (see (7)) and can be moved to the inner [Spec, v] ((15c)).

- (15) c. [_{vP} John_{Matrix} SUBJ [_{v'} [_{PP} Nihon-no rekishi-ni] [_{v'} [_{VP} David_{SUBJ} [_{v'} [_{CP} t_{SUBJ}] [_{C'} t_{PP}] [_{C'} [_{TP} [_{aP} t_{SUBJ}] [_{a'} t_{PP}] [_{a'} [_{AP} t_{PP} kuwashi] *a*]]] *i*] to]] omow]] *v*]]]

After T is merged with *vP*, the matrix subject in the outer [Spec, *v*] is raised to [Spec, T] due to the EPP. Because the matrix subject has been extracted, the PP in the inner [Spec, *v*] can be moved to [Spec, C] (see (7)), which I assume is the landing site of long-scrambling ((15d)). The adverbial is inserted by Late Merge as the adjunct of *V'*.

- (15) d. [_{CP} [_{PP} Nihon-no rekishi-ni] [_{C'} [_{TP} John_{Matrix} SUBJ. [_{T'} [_{vP} t_{SUBJ.M}] [_{v'} t_{PP}] [_{v'} [_{VP} David_{SUBJ} [_{v'} Adv [_{v'} [_{CP} t_{SUBJ}] [_{C'} t_{PP}] [_{C'} [_{TP} [_{aP} t_{SUBJ.E}] [_{a'} t_{PP}] [_{a'} [_{AP} t_{PP} kuwashi] *a*]]] *i*] to]] omow]]] *v*]]] T]] C]]]

Importantly, the movement of the embedded subject from the outer [Spec, C] enables the subsequent extraction of the PP in the inner [Spec, C] ((15b, c)).

Here I would like to return to (3b)/(4a). If the accusative subject in (3b)/(4a) were moved from the outer [Spec, C] in a string-vacuous fashion, (3b)/(4a) would be incorrectly predicted to be grammatical. This is the reason why I proposed above that the movement of the accusative subject to the matrix [Spec, V] (i.e. VP-internal scrambling) cannot be string-vacuous.

The unacceptability of long-scrambling out of an RTO-complement was first noticed by Kaneko (1988). He attributed it to the "alleged" uniqueness of [Spec, C]: the embedded subject and long-scrambled element compete for the only [Spec, C] (see Aravind (2020) for a recent analysis of a similar fact in Mongolian). The improved acceptability of (4b) is problematic for this analysis. The accusative subject in (4b) is moved into the matrix domain through the unique [Spec, C]. It is incorrectly predicted that long-scrambling cannot pass through the unique embedded [Spec, C] in (4b) either.

The proposed analysis can be extended to (16), where the accusative subject is scrambled to the position before the matrix subject/topic, and to (17), where the embedded subject is promoted to the matrix subject by passivization.

- (16) a. ?[Nihon-no rekishi]-ni, David-o John-ga kuwashi-i-to
 Japan-GEN history-DAT David-ACC John-NOM familiar-PRES-COMP
 omot-ta
 think-PAST
 'The history of Japan, John thought David to be familiar with.'
- b. ?[Nihon-no rekishi]-ni, David-o John-wa kuwashi-i-to
 Japan-GEN history-DAT David-ACC John-TOP familiar-PRES-COMP
 omot-ta
 think-PAST

- ‘The history of Japan, John thought David to be familiar with.’
- (17) [Nihon-no rekishi]-ni, David-ga kuwashi-i-to
 Japan-GEN history-DAT David-NOM familiar-PRES-COMP
 omow-are-tei-ru
 think-PASS-ASPECT-PRES
 ‘The history of Japan, David is thought to be familiar with.’

The embedded subject is moved from the outer [Spec, C] to the matrix domain in both (16) and (17), enabling the PP in the inner [Spec, C] to move out of the embedded CP (cf. (15b, c)).

5. Concluding Remarks

The proposed analysis has the following implications. First, it offers an additional piece of evidence for (5). Second, it offers an additional piece of evidence that the ‘raised’ accusative subject is moved to [Spec, C]. If the accusative subject were not moved to [Spec, C], it would be a mystery why it interferes with long-scrambling. Third, it offers a piece of evidence for the successive-cyclicity of long-scrambling. The accusative subject in the RTO construction occupies the outermost [Spec, C] and interferes with long-scrambling across itself. This point shows that long-scrambling heads for the outermost edge of an intermediate phase and is thus successive-cyclic.

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